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June 8, 2010

United States Army Corps of Engineers
Kansas City District
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ATTN: CENWK-PM-ES/Buckrucker

CONTRACT: W912DQ-08-D-0018

PROJECT: Lower Passaic River Restoration Project
Remedial Investigation/Feasibility Study Oversight
Lower Passaic River Study Area, New Jersey

SUBJECT: Quality Assurance Project Plan, Final Addendum #3
Spring and Summer 2010 Benthic Invertebrate Community Surveys

Dear Ms. Buckrucker:

CDM Federal Programs Corporation (CDM) is pleased to submit this electronic copy of the Quality Assurance Project Plan, Final Addendum No. 3 for the Oversight of Remedial Investigation/Feasibility Study Spring and Summer 2010 Benthic Invertebrate Community Surveys in support of the Lower Passaic River Restoration Project in the Lower Passaic River Study Area, New Jersey. This document is based on the CPG QAPPs for the Benthic Invertebrate Community Surveys.

If you have any comments concerning this submittal, please contact me at (212) 377-4056.

Very truly yours,
CDM FEDERAL PROGRAMS CORPORATION

A handwritten signature in black ink, appearing to read 'C. Tsang'.

Frank Tsang, P.E.
Task Order Manager

Attachment

cc:	S. Vaughn, EPA	Bill Sy, EPA
	J. Mosher, P.E., CDM (Letter Only)	S. Budney, CHMM, CDM
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	Project File	

US Army Corps of Engineers
Kansas City District

Quality Assurance Project Plan
Final Addendum #3
Spring and Summer 2010 Benthic Invertebrate
Community Surveys

Remedial Investigation/Feasibility Study Oversight
Lower Passaic River Restoration Project
Lower Passaic River Study Area, New Jersey

USACE Contract No. W912DQ-08-D-0018
Task Order No. 014

June 8, 2010

**LOWER PASSAIC RIVER RESTORATION PROJECT
OPERABLE UNIT (OU) 2**

**Remedial Investigation/Feasibility Study Oversight
Quality Assurance Project Plan
Final Addendum #3
Spring and Summer 2010 Benthic Invertebrate Community Surveys
Lower Passaic River Study Area, New Jersey**

USACE CONTRACT No. W912DQ-08-D-0018

TASK ORDER No. 014

June 8, 2010

**Prepared for:
U.S. Army Corps of Engineers
Kansas City District**

**Prepared by:
CDM
125 Maiden Lane, 5th Floor
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CDM Field Oversight Form in Appendix B of the Physical Water Column Monitoring/Generic Final QAPP dated March 9, 2010 will be used during the Benthic Community Surveys.

Note: Worksheets not included herein are included in the Physical Water Column Monitoring/Generic Final QAPP dated March 9, 2010.

Introduction

CDM Federal Programs Corporation (CDM) will perform oversight of the Cooperating Parties Group (CPG) Spring and Summer 2010 Benthic Invertebrate Community Survey.

This Quality Assurance Project Plan (QAPP) Addendum and the *Lower Passaic River RI/FS Oversight Final QAPP, Physical Water Column Monitoring and Generic Information for Upcoming Tasks*, dated March 2010 (hereafter referred to as the Final QAPP) is the governing document for execution of this oversight. CDM will use the various plans prepared by the CPG contractors to verify proper execution of the Benthic Invertebrate Community Surveys, conducted as part of the RI/FS.

The March 2010 Final QAPP indicated that future oversight tasks assigned to CDM would be appended with selected worksheets. It was anticipated that Worksheets 12, 15, 18, 20, and 28 would be updated as needed for additional events, and other worksheets would also be included. However since the benthic invertebrate community surveys will not include analytical services, worksheets 12, 15, 20, and 28 are not required for this update. Instead, the following worksheets are included in this addendum to reflect the CPG QAPPs, *Benthic and Invertebrate Toxicity and Bioaccumulation Testing* (Windward 2009) and Benthic QAPP Addendum No. 1:

- Worksheet No. 1 contains the title and approval pages for the addendum
- Worksheet No. 2 contains the QAPP identifying information
- Worksheet No. 3 provides the distribution list
- Worksheet No. 10 describes the specific problem definition for the benthic invertebrate community survey
- Worksheet No. 11 provides the project quality objectives
- Worksheet No. 14 provides a summary of project tasks
- Worksheet No. 16 provides the schedule and timeline
- Worksheet No. 18 provides the proposed survey locations
- Worksheet No. 37 provides the usability assessment (field summary report)

The CPG's Benthic QAPP Addendum No. 1 provides procedures for conducting the benthic invertebrate community surveys.

1.1 Spring and Summer 2010 Benthic Invertebrate Community Survey Summary

CDM's oversight program is designed to provide technical review and evaluation of CPG-implemented QAPPs for the benthic invertebrate community surveys. Additional oversight activities will include review of CPG-selected sampling locations and supporting documents.

This oversight QAPP details the planning processes for conducting field oversight; no samples will be collected. The objective of CDM's observations and review is to verify the accuracy of the CPG's data.

QAPP Worksheet #1
Title and Approval Page

Document Title: LPR Restoration Project Quality Assurance Project Plan (QAPP) Addendum No. 3, Benthic Invertebrate Community Surveys

Lead Organization: United States Army Corps of Engineers (USACE) - Northwestern Division

Preparer's Name and Organizational Affiliation: Jeniffer Oxford, CDM

Preparer's Address, Telephone Number, and E-mail Address: 125 Maiden Lane, New York, NY 10038; 212-377-4536; oxfordjm@cdm.com

Preparation Date (Day/Month/Year): June 8, 2010

Investigative Organization's Task Order Manager/Date:


Signature

Frank Tsang/CDM

Investigative Organization's Project QA Manager/Date:


Signature

Doug Updike/CDM

Lead Organization's Project Manager/Date:

Signature

Elizabeth Buckrucker/USACE - KC District

EPA Remedial Project Manager /Date:

Signature

Stephanie Vaughn

EPA Quality Assurance Officer /Date:

Signature

William Sy

Document Control Numbering System: Not Applicable (N/A)

QAPP Worksheet #2

QAPP Identifying Information

Site Name/Project Name: Lower Passaic River (LPR) Restoration Project	Title: QAPP Addendum No. 3, Benthic Invertebrate Community Surveys
Site Location: LPR study area, New Jersey	Revision Number: 0
Site Number/Code: NJD 980528996	Revision Date: NA
Operable Unit (OU): OU2	
Contractor Name: CDM	
Contractor Number: W912DQ-08-D-0018	
Contract Title: Unrestricted Indefinite Delivery/Indefinite Quantity, Multiple Award Contract, for Architect-Engineer (AE) Environmental Services for EPA Region 2 and the Corps of Engineers Northwestern Division.	
Task Order Number: 14	

1. Regulatory program: Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Superfund)
2. Approval entity: United States Army Corps of Engineers (USACE)
3. The QAPP is (select one): Generic ☒ **Project Specific**
4. Dates of negotiation: NA
5. Dates and titles of QAPP documents written for previous and current site work, if applicable:

Title	Approval Date
See Final QAPP for a full list of previous QAPP prepared for site work	
Lower Passaic River RI/FS Oversight Final QAPP, Physical Water Column Monitoring and Generic Information for Upcoming Tasks (PWCM/Generic QAPP)	March 2010
Lower Passaic River RI/FS Oversight QAPP, Draft Addendum #1: Avian Community Survey	TBD-June 2010
Lower Passaic River RI/FS Oversight QAPP, Final Addendum #2: Fish Community Survey	June 2010

6. Organizational partners (stakeholders) and connection with lead organization:
EPA, USACE, New Jersey Department of Environmental Protection (NJDEP), New Jersey Department of Transportation (NJDOT), National Oceanic Atmospheric Administration (NOAA), United States Fish and Wildlife Service (USFWS)
7. Data users: Partner Agencies, CDM, Louis Berger Group, Inc., HydroQual, Inc., and stakeholders.
8. If any required QAPP elements and required information are not applicable to the project, then circle the omitted QAPP elements and required information on the attached table. Provide an explanation for their exclusions below: the Final Generic QAPP provides all the required worksheets. *This addendum addresses only the oversight of the Benthic Invertebrate Community Surveys; therefore only worksheets pertinent to this task and information not previously provided are included.*

This is an oversight project; therefore, the CPG's contractors will be performing health and safety monitoring, and will be responsible for equipment calibration, inspection and maintenance (survey instruments). CDM will monitor the field activities and document observations.

QAPP Worksheet #3 Distribution List

QAPP Recipients	Title	Organization	Telephone Number	Fax Number	E-mail Address
Stephanie Vaughn	Remedial Project Manager (RPM)	EPA	(212) 637-4427	(212) 637-4393	Vaughn.stephanie@epamail.epa.gov
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Janine MacGregor	Partner Agency	NJDEP	(609) 633-0784		Janine.macgregor@dep.state.nj.us
Elkins Green	Partner Agency	NJDOT	(609) 530-8075		elkins.green@dot.state.nj.us
Tim Kubiak	Partner Agency	USFWS	(609) 646-9310		tim_kubiak@fws.gov
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Frank Tsang	Task Order Manager	CDM	(212) 377-4056	(212) 785-6114	Tsangc@cdm.com
Sharon Budney	Deputy Task Order Manager	CDM	(732) 590-4662	(732) 225-7851	budneysl@cdm.com
Jeniffer Oxford or other assigned QAC	Regional QA Coordinator (RQAC)/ Project QA Officer	CDM	(212) 377-4536	(212) 785-6114	oxfordjm@cdm.com
George Molnar	Field Task Leader	CDM	(732) 590-4633	(732) 225-7851	molnargc@cdm.com
Scott Kirchner	Analytical Services Coordinator	CDM	(732) 590-4677	(732) 225-7851	kirchnersf@cdm.com
James Fitzpatrick	Sediment Transport Modeler	HydroQual	(201) 529-5151	(201) 529-5728	jfitzpatrick@hydroqual.com

QAPP Worksheet #10 Problem Definition

The problem to be addressed by the project:

Benthic invertebrate surveys: As part of the LPR restoration project, the CPG will conduct two seasonal benthic invertebrate community surveys to provide qualitative data on the species that use the LPRSA. Surveys will be conducted in the spring and summer months. These surveys would complement the benthic invertebrate community survey of fall 2009. The oversight program is designed to provide observation, technical review and evaluation of the CPG-implemented field sampling plans to ensure that the CPG's contractors conduct the benthic invertebrate surveys in accordance with their approved QAPPs.

The environmental questions being asked:

- Does the CPG data adequately describe the site conditions and is it representative for project decisions?
- Is the CPG data complete and accurate?
- Does the CPG data capture seasonal variation of the diversity and abundance of the benthic invertebrate community?
- Are the CPG benthic invertebrate surveys being completed in a consistent fashion?
- Are the CPG surveys correctly identifying each benthic invertebrate species?
- Are the field observations comparable?
- Is CDM's field observation complete?

Secondary data:

The CPG used the secondary data provided in the *Benthic and Invertebrate Toxicity and Bioaccumulation Testing* QAPP (Windward 2009) and information derived from the fall 2009 survey to identify locations and the sampling rationale used to prepare their Benthic QAPP Addendum No. 1. CDM reviewed the Benthic QAPP Addendum No. 1 and provided comments. Future use of the secondary data may be to provide technical review of CPG documents.

The possible classes of contaminants and the affected matrices: Not applicable

The rationale for inclusion of chemical and non-chemical analyses: Not applicable

Project decision conditions ("If..., then..." statements):

- If field work is inconsistent with the CPG QAPPs, then the field oversight staff will verify tasks with respect to the CPG's QAPPs, and HASP and note deviations with the CPG's field project leader and document such discussions in the Daily QC Reports submitted to EPA. The CDM Task Order Manager, USACE PM and EPA RPM will be informed if there are deviations.
- If the CPG team needs to relocate survey locations, or there are any changes to the planned field program, CDM will communicate this change to the USACE and document it on the Daily QC Reports.

CDM will present the data findings in a report and submit it to the USACE and EPA who will then determine if any additional actions are required.

QAPP Worksheet #11

Project Quality Objectives /Systematic Planning Process Statements

Who Will Use the Data? USACE, EPA and other partner agencies, CDM, and stakeholders (as necessary).

What Will the Data be Used For?

Oversight activities will monitor the CPG-implemented benthic invertebrate community survey program to verify that elements of the approved RI/FS QAPPs are fulfilled. The oversight field crew will also review the CPG-selected survey locations. CDM observed data will be compared to the data observed by the CPG to determine if a bias exists in the data produced by the CPG and if the data is complete.

The CDM oversight data will be used for comparison with the CPG data and to determine whether the CPG data is accurate and compliant with the approved QAPPs.

To further achieve these objectives, CDM field personnel will observe the CPG's contractors field implementation of the RI/FS QAPPs and note any deviations. Deviations will be brought to the attention of the CPG's contractor, and reported to the CDM task order manager who will communicate this information to the USACE PM and EPA RPM. These will be documented in the Daily Field Summaries and in the Final Report and include a discussion of the impact of the deviation(s) on the data quality. The CPG contractor's activities will be documented in the field logbook and oversight forms. A copy of the oversight form is provided in Appendix B of CDM's Final QAPP.

What Type of Data is Needed?

Data needs include: CDM will observe two surveys conducted by the CPG's contractor to document information on the seasonal variations in the benthic invertebrate community including total number of taxa (e.g., species) present, abundance of each specie or specific taxonomic group, survey location(s), time of observation. These will be conducted at a subset of the fall 2009 survey locations.

How much data are needed?

Oversight observations will be made at the locations shown on Figure 1 and Worksheet #18 of the CPG's Benthic QAPP Addendum No. 1, Spring and Summer Benthic Invertebrate Community Surveys or as modified and approved by USACE and EPA. Observations will be conducted at the same locations, times and frequency as the CPG contractor's surveys. Worksheets Nos. 11 and 18 of the CPG's Benthic QAPP Addendum No. 1 show the planned locations for sampling.

How "good" do the data need to be in order to support the environmental decision?

The data to be collected is qualitative in nature, therefore quantitative limits and quantitative quality objectives are not applicable. The oversight observation will mirror the CPG locations, level of identification and frequencies to allow data comparability. CDM's oversight staff will document whether the observed level of identification is comparable with the CPG's report and the levels presented in Table 11-1 of the CPG's Benthic QAPP (Windward 2009). The representativeness of the data is dependent on the sampling design.

In addition, to ensure that the observed data is usable, the accuracy, representativeness, comparability, and completeness will be evaluated and presented in a CDM data report. The data usability assessment will evaluate whether appropriate field procedures were followed and whether data met the approved QAPP and are usable for the stated project needs.

QAPP Worksheet #11
Project Quality Objectives /Systematic Planning Process Statements

Where, when, and how should the data be collected?

Field survey procedures are described in the CPG's Benthic QAPP Addendum No. 1. Oversight will be performed according to the CPG's schedule. The spring benthic invertebrate survey is currently planned for June 1, 2010 (refer to Worksheet 16) and another survey will be conducted in summer 2010. The survey locations are shown in the CPG Benthic QAPP Addendum No. 1, Figure 1 and Worksheet #18. The CPG's Benthic QAPP (Worksheet #11 and Attachment D) details the survey procedures which describe how the investigation will be performed.

Who will collect and generate the data?

CDM oversight staff will record field observations while the field sampling program is being conducted.

How will the data be reported?

- Field observations will be recorded as described in CDM's Final QAPP using field oversight forms provided in Appendix B therein. Oversight staff will also record notes in field logbooks in accordance with TSOP 4-1 provided in Appendix C of the CDM Final QAPP.
- Results will be reported in text format and will include a discussion of the data quality, deviations from the QAPP, and oversight data comparability with the CPGs data. This review will be used to evaluate the accuracy of the CPG data.

How will the data be archived?

- Hard copies of the field notes will be kept in the Edison office until archived in the project file; if requested survey data will be uploaded to a PREmis or equivalent database.

The CDM March 2010 Final QAPP contains other archival information.

QAPP Worksheet #14 Summary of Project Tasks

Sampling Tasks:

As part of the LPR Restoration Project, the CPG is implementing an estuarine dynamic and sediment transport, and biological field sampling program to support the RI/FS. On behalf of the USACE and EPA, CDM will provide oversight and will record observations at all locations. The oversight program is designed to provide technical review and evaluation of CPG-implemented field sampling plans. Worksheet 10 discusses the oversight activities that will occur; and Worksheet 11 provides details on the data to be collected. CDM is tasked to observe and document the sampling conducted during the surveys.

Analysis Tasks:

Split samples will not be collected during oversight of the benthic invertebrate surveys. Oversight forms (Appendix B of the CDM Final QAPP) documenting field observations will be completed by CDM's oversight staff.

Quality Control Tasks: CDM will observe CPG's calibration, testing and maintenance of their GPS units. CDM will document observations of the survey on field logs and in the field logbooks. The CDM Deputy Task Order Manager or designee will review the logs to ensure that the required information has been documented.

Secondary Data: Since this is an oversight project, no secondary data is being used directly by CDM. Data generated by the CPG- field program will be used as shown on worksheet 11 of the CPG's Benthic QAPP Addendum No. 1: Spring and Summer 2010 Benthic Invertebrate Community Surveys.

Data Management Tasks:

Observations of the surveys will be documented as described above and undergo QC review. The survey sheets will be maintained in the project file and used to review the CPG's reports. The information can be uploaded to the PREMIS database if required.

No analytical data will be generated.

Documentation and Records: Records of observed species will be documented on Appendix B – CDM Final QAPP. All field activity and deviations will be documented on the survey sheets and additional information in project logbooks.

The Benthic Invertebrate Community Survey procedures are documented in Attachment D of the CPG's Benthic QAPP and Worksheet # 11 of the CPG's Benthic QAPP Addendum No. 1: Spring and Summer 2010 Benthic Invertebrate Community Surveys. Oversight observations will be documented in the following:

1. Field logs/logbooks
2. Oversight Summary Report
3. Data Quality Summary Report

All procedures will be documented in accordance with TSOP 4-1 provided in Appendix C of the CDM Final QAPP.

QAPP Worksheet #14 Summary of Project Tasks

Assessment/Audit Tasks: See CDM Final QAPP for assessment tasks (CDM 2009)

Data Review Tasks: The CPG Benthic Invertebrate Community Surveys Data Report will be reviewed by CDM. A data quality evaluation will be performed based on CPG compliance with the approved QAPP. A comparison of CDM's field staff observations with the CPG data report will be included in the data quality evaluation and submitted to the USACE.

QAPP Worksheet #16
Project Schedule Timeline Table

Activities	Organization	Anticipated Date(s) of Initiation	Anticipated Date of Completion	Deliverable	Deliverable Due Date
Prepare and submit: Draft Oversight QAPP Addendum for Benthic Invertebrate Community Surveys to EPA and USACE	CDM	May 2010	May 25, 2010	UFP-QAPP addendum	May 25, 2010
Prepare and submit: Final Oversight QAPP Addendum for Benthic Invertebrate Community Survey	CDM	As soon as comments are received – June 7, 2010	June 8, 2010	UFP-QAPP addendum	June 8, 2010
Oversight of Benthic Invertebrate Surveys	CDM	June 1, 2010	10 days after commencement date	Summary report of field observations including photographs	To be determined
Oversight /Data Evaluation	CDM	To be determined	To be determined	Oversight Summary Report/ Data Quality Summary Report	To be determined
Review CPG Benthic Invertebrate Community Survey Data Report	CDM	90 days after each survey event	1 month after receipt of report	Comments on Benthic Invertebrate Community Survey Data Report	1 month after receipt of report

QAPP Worksheet #18
Sampling Locations and Methods/SOP Requirements Table

Survey Location ID	Depth	Analytical Group	Concentration Level	Estimated Number of Samples (identify field duplicates)	Sampling SOP Reference	Rationale for Sampling Location
Refer to QAPP prepared by Windward Environmental (Windward) for the CPG	Not applicable	Not applicable	Not applicable	All survey locations will be observed.	Attachment D (SOP-Collection and Processing of Sediment Grab Samples) of CPG Benthic QAPP (Windward 2009)	See Worksheet 10 "The rationale for sample locations" section, Worksheet 18, and Figure 1 of the CPG Benthic QAPP prepared by Windward

Notes:

Refer to the Benthic QAPP prepared by Windward for the CPG (Worksheet # 10 and 18 and Figure 1) titled, Benthic QAPP Addendum No. 1: Spring and Summer 2010 Benthic Invertebrate Community Surveys (April 14, 2010).

QAPP Worksheet #37

Usability Assessment

An Oversight Summary Report and Data Quality Summary Report will be prepared by CDM personnel. Frank Tsang, Task Order Manager, will be responsible for its content and for assigning this task to CDM personnel. The Data Quality Summary Report will include a comparability review and usability assessment of the data. Data will be documented in the CPG's Benthic Invertebrate Community Survey Data Report. The Data Quality Summary Report will include an overall assessment of the CPG's data using field oversight observations of deficiencies and compliance.

Accuracy –The accuracy of the CPG data set will be measured qualitatively by assessing the observed adherence of the benthic invertebrate survey to the CPG's Benthic QAPP.

Representativeness –The representativeness of the survey data will be evaluated based on the ability to implement the benthic invertebrate surveys as written in the QAPP. A determination will be made based on the observations completed during the surveys, whether the benthic invertebrate survey observations accurately represent benthic invertebrate populations in the study area during each of the seasonal surveys, and whether the results are comparable with those made in previous surveys.

Comparability –The results of this oversight will be used in conjunction with the CPG's data to support the survey results. The surveys will be observed and data reported in a manner that is comparable to the CPG's data set.

Completeness – A completeness check will be performed. Completeness will be determined based on whether all CPG planned (or modified) survey locations were visited at the pre-determined frequencies and the obtained data set compared to the project completeness goal of 90 percent. A discussion summarizing the results of project completeness and any limitations on the use of the data will be described in the report.

The results will be presented in text of the Data Comparability Report. Data gaps will be evaluated if requested by USACE/EPA. The report will discuss the completeness of the planned and collected data and the affect on the data objective of evaluating the accuracy of the CPG's data.

Appendix G

Figure 1 Excerpted from CPG's Benthic QAPP
Addendum No. 1: Spring and Summer 2010
Benthic Invertebrate Community Surveys

